

## Completing the Square

For each expression, find the number you would add to make it a perfect square trinomial.

1.  $x^2 + 10x + ?$  \_\_\_\_\_ 2.  $y^2 - 6y + ?$  \_\_\_\_\_ 3.  $z^2 - 5z + ?$  \_\_\_\_\_  
4.  $x^2 + 11x + ?$  \_\_\_\_\_ 5.  $y^2 + \frac{1}{3}y + ?$  \_\_\_\_\_ 6.  $z^2 - \frac{3}{5}z + ?$  \_\_\_\_\_

For each equation, find the value of  $k$  that would make the left side a perfect square trinomial.

7.  $y^2 + ky + 36$  \_\_\_\_\_ 8.  $z^2 - kz + 49 = 0$  \_\_\_\_\_  
9.  $x^2 - kx + 64$  \_\_\_\_\_ 10.  $x^2 + kx + 100 = -12$  \_\_\_\_\_

Solve by taking the square root of each side.

11.  $(z + 5)^2 = 36$  \_\_\_\_\_ 12.  $(x - 2)^2 = 18$  \_\_\_\_\_  
13.  $(x + 7)^2 = \frac{49}{16}$  \_\_\_\_\_ 14.  $y^2 + 8y + 16 = 1$  \_\_\_\_\_

Solve by completing the square.

15.  $x^2 + 4x - 21 = 0$  \_\_\_\_\_ 16.  $y^2 - 2y - 48 = 0$  \_\_\_\_\_  
17.  $y^2 + 10y - 3 = 0$  \_\_\_\_\_ 18.  $z^2 + 12z + 4 = 0$  \_\_\_\_\_  
19.  $x^2 - 14x + 58 = 0$  \_\_\_\_\_ 20.  $x^2 - x - 5 = 0$  \_\_\_\_\_

## Application

21. **Number Theory** The square of a number, decreased by ten times the number, is equal to  $-24$ . What is the number? \_\_\_\_\_

## MIXED PRACTICE

Simplify.

22.  $\sqrt{28}$  \_\_\_\_\_ 23.  $\sqrt{\frac{3}{5}}$  \_\_\_\_\_  
24.  $\sqrt{-50}$  \_\_\_\_\_ 25.  $\sqrt{\frac{-8}{11}}$  \_\_\_\_\_

Solve by completing the square.

26.  $x^2 + 12x + 35 = 0$  \_\_\_\_\_ 27.  $y^2 - y - 1 = 0$  \_\_\_\_\_  
28.  $4z^2 - 8z + 1 = 0$  \_\_\_\_\_ 29.  $5x^2 - 8x = -6$  \_\_\_\_\_